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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 9724-2007

**Chemical reagent -- General rule for the determination of pH
(English Translation)**

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Foreword

This Standard is not equivalent to ISO 6353-1.1982 "Reagents for chemical analysis - Part 1.General test methods".

This Standard replaces GB/T 9724-1988 "Chemical reagent - General rule for the determination of pH". Compared with GB/T 9724-1988, the main changes are as follows.

- ADD the normative references (Chapter 2);
- INCREASE the degree of accuracy of the acidometers (5.2);
- ADD saturated calomel electrode with double salt bridge and composite electrode (5.3 of this Standard);
- DELETE antimony electrode (5.3.2 in 1988 edition);
- ADD control of the operating conditions of the counter electrodes (Chapter 6 of this Standard);
- MODIFY contents in Annex A.

Annex A of this Standard is Informative.

This Standard was proposed by China Petroleum and Chemical Industry Association.

This Standard shall be under the jurisdiction of the National Technical Committee of Standardization for Chemicals (SAC/TC63/SC3).

Drafting organization of this Standard. Shanghai No.4 Reagent & H.V. Chemical Co.,

Ltd.

Chief Drafting Staff. Jia Ling.

This Standard was first-time issued in 1988.

Chemical reagent -

General rule for determination of pH

1 Scope

This Standard specifies the general rules for measurement of pH of water solution in electrometric method.

This Standard is applicable to the measurement of pH of chemical reagent and water solution. The measurement range of pH is 1 ~ 12.

2 Normative References

The provisions in following documents, through reference in this text, constitute the provisions of this Standard. For dated reference, all subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who have reached an agreement on this Standard are encouraged to study whether the latest revisions of these documents are applicable. For undated reference, the latest revisions apply to this Standard.

GB/T 601 Chemical Reagent - Preparation of Standard Volumetric Solution

GB/T 603 Chemical reagent - Preparations of reagent solutions for use in test methods (GB/T 603-2002, ISO 6353-1.1982, NEQ)

GB/T 6682 Water for laboratory use - Specifications (GB/T 6682-1992, neq ISO 3696.1987)

3 Method and Theory

Soak the specified indicator electrode and reference electrode into the solution to be measured to form a primary battery, whose electromotive force is related to the pH of solution.

4.1 General provisions

Unless otherwise specified, all of the standard volumetric solutions, reagent and finished products shall be prepared according to provisions in GB/T 601 and GB/T 603.

4.2.1 Standard buffer solutions for oxalate separation process

Weigh 12.71 g of potassium tetroxalate ($\text{KH}_3(\text{C}_2\text{O}_4)_2 \cdot 2\text{H}_2\text{O}$) to dissolve it in carbon dioxide-free water; dilute to 1000 mL. The concentration of this solution $c[\text{KH}_3(\text{C}_2\text{O}_4)_2 \cdot 2\text{H}_2\text{O}]$ is 0.05 mol/L.

4.2.4 Standard buffer solution for phosphate

Weigh 3.40 g of potassium dihydrogen phosphate (KH_2PO_4) and 3.55 g of disodium hydrogen phosphate (Na_2HPO_4); dissolve them in carbon dioxide-free water to 1000mL.

4.2.5 Standard buffer solution for borate

Weigh 3.81 g of sodium borate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$); dissolve it in carbon dioxide-free water to 1000mL. Prevent carbon dioxide in the air from entering in their storage. The concentration $c(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O})$ of this solution is 0.01mol/L.

4.3 pH value of standard buffer solution

The pH value of various standard buffer solutions at different temperatures are shown in Table 1.

5.2 Acidimeter

It shall be in accordance with requirements of "grade 0.02" in 4.7 of JJG 119- 2005.

5.3 Electrodes

The application and maintenance of electrodes are shown in Annex A.

This Standard specifies that.

6 Measurements

Use non-carbon dioxide water to prepare the samples into 50 g/L solution (except special case).

Annex A

(Informational Appendix)

Application and maintenance of the electrodes

A.1 Glass electrodes

Before use, new electrodes shall be soaked in the water for above 24 hours; after use, it shall be rinsed immediately and be submerged in water for conservation.

A.2 Saturated calomel electrodes

During use, the rubber stopper on the small hole at the upper end of the electrode must be pulled out to prevent diffusion potential that may impact the measurement result. The potassium chloride solution inside electrodes must not have bubble to prevent open circuit. There shall maintain some potassium chloride crystals in the solution, so as to ensure that the potassium chloride is in saturation. The connecting parts of the electrode shall not be stained or blocked, and to maintain appropriate speed of effluent seepage.

A.3 Saturated calomel electrode with double salt bridge

The salt bridge sleeves shall be loaded with saturated ammonium nitrate or potassium nitrate solution; other caution items are same as that of saturated calomel electrode.

A.4 Composite electrode

For the composite electrodes, the following matters shall be paid attention to.

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